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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,202	11/13/2001	Bruno Scheumacher	P 284108 RP-00296-US2	6169
909	7590	12/16/2004	EXAMINER	
PILLSBURY WINTHROP, LLP P.O. BOX 10500 MCLEAN, VA 22102			LUBY, MATTHEW D	
			ART UNIT	PAPER NUMBER
			3611	
DATE MAILED: 12/16/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/987,202

Applicant(s)

SCHEUMACHER ET AL.

Examiner

Matt Luby

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 13, 15, 16 and 24-27 is/are rejected.
- 7) ☒ Claim(s) 11, 12, 14, 17-23 and 28-30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Applicant's reply filed September 16, 2004 has perfected their priority to 60/547,052. This perfection of priority also overcomes the 35 USC 102(b) rejection of claims 1-2 and 26 as being anticipated by Yatagai et al. (U.S. Patent No. 6,561,297) and the 35 USC 103(a) rejections using Atsuumi et al. (U.S. Patent No. 6,454,037) as a base reference. New 35 USC 103(a) rejections follow below. (The amendment filed therewith also overcomes the 112, 2nd paragraph rejection of claim 12.)

Claim Objections

2. Claim 2 is objected to because of the following informalities: the limitation "with each of said combustion chambers" is grammatically incorrect and should be changed to "with each said respective combustion chamber". Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 1, 2, 5, 6, 15, 16, 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida (U.S. Patent No. 6,155,374) view of Minami et al. (U.S. Patent No. 4,475,617).

As per claim 1, Uchida discloses a snowmobile (10), comprising: a frame (12); an engine (42); an endless belt-drive system (16); an air intake system for the engine (60 and 64 make up the air intake system); and the frame having a forward portion (made up of components including 18 and 20 and an aft portion (made up of components including 22 and 26); wherein the engine is mounted to the forward portion (shown in Figure 1), the belt drive system being mounted to the aft portion and operatively connected to the engine (shown mounted to the aft portion in Figure 1; shown operatively connected to the engine in Figure 1 at 50); the engine being a four-stroke type engine (col. 5, lines 1-4 disclose that the engine may operate on any known cycle including four-stroke). Uchida does not disclose that the engine is turbocharged.

Minami et al. disclose a small, personal vehicle for a rider and possibly a passenger (11, Figure 1) which utilizes an engine (13) of any known type, for example, a four stroke cycle (col. 2, lines 59-61). This engine has a supercharger of the turbocharger type (37) for providing air under pressure (col. 2, lines 62-67). Minami et al. note in col. 1, lines 15-17 that the use of exhaust driven superchargers/turbochargers increase power output of the engine (col. 1, lines 15-17). It would have been obvious to one of ordinary skill in the art at the time of the invention to add a turbocharger to the four-stroke engine of Uchida, as taught by Minami et al., in order to increase power output of the engine.

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As per claims 2, 5, 15 and 16, Uchida discloses that the engine includes at least one cylinder (in cylinder block 46 are cylinder bores 48), each cylinder having a respective combustion chamber (58 - each cylinder has a combustion chamber) having an air inlet capable of communicating with each of the combustion chambers (col. 5, lines 41-50 describe how air is input into the combustion chamber) and an exhaust outlet capable of communicating with each of the combustion chambers (col. 6, lines 1-6 describe that, as is notoriously well known in the art of engine technology, the spent gases are exhausted; while this the description utilizes a 3 cylinder, 2 stroke engine, these structures would be present for the other engine embodiments as well, namely the four-stroke engine); the air intake system comprising: an air passage (60 leading into 64) communicated with the atmosphere (col. 5, lines 32-34), wherein the air passage is a substantially hollow enclosed structure (the vents 60 lead into 64) and positioned forward of the engine in spaced relation thereto (the lower passage 60, as shown in Figure 1, is positioned forward of the engine, 42). The Uchida invention does not teach a turbocharger connected to the air passage such that air from the air passage may enter the turbocharger, the turbocharger communicating with the exhaust outlet and being constructed and arranged such that a flow of exhaust gases from the exhaust outlet through the turbocharger and then to the atmosphere, affects a pressurization of air therein, wherein the exhaust system includes a muffler. Minami et al. disclose a small, personal vehicle for a rider and possibly a passenger (11, Figure 1) having a four-stroke engine (13, col. 2, lines 59-61) with a turbocharger (37) connected to an air passage (45) such that air from the air passage may enter the turbocharger

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(col. 3, lines 16-22), the turbocharger communicating with the exhaust outlet and being constructed and arranged such that a flow of exhaust gases from the exhaust outlet through the turbocharger and then to the atmosphere affects a pressurization of air therein, (col. 1, lines 40-43; col. 2, lines 64-67 and col. 3, lines 6-15) wherein the exhaust system includes a muffler (52), in order to provide a system that will increase power output of the engine by interacting with the existing systems such as the intake and exhaust systems of the engine (col. 1, lines 40-43; col. 2, lines 64-67 and col. 3, describe the working arrangement of the turbocharger and its relationship with the other parts of the engine). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the four stroke engine of Uchida to have the turbocharger connected to the air passage such that air from the air passage may enter the turbocharger, the turbocharger communicating with the exhaust outlet and being constructed and arranged such that a flow of exhaust gases from the exhaust outlet through the turbocharger and then to the atmosphere affects a pressurization of air therein, wherein the exhaust system includes a muffler on Uchida, as taught by Minami et al., in order to provide a system that will increase power output of the engine by interacting with the existing systems such as the intake and exhaust systems of the engine.

As per claim 6, the Uchida in view of Minami et al. invention discloses the claimed invention except that the air passage is positioned aft of the engine in spaced relation thereto. Applicant points out no criticality for that specific positioning that gives a different advantage from positioning the air passage forward of the engine in spaced

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relation thereto, and in fact points out that the air passage may either be positioned aft or forward (claim 5 vs. claim 6) in order to give the identical benefit. Thus, it would appear that the exact positioning either forward or aft of the engine, for the air passage, is not critical and may be varied depending upon possible overall design parameters, such as overall compactness of the snowmobile. It would have been obvious at the time of the invention to one of ordinary skill in the art to choose the exact positioning of the air passage with respect to engine, such as aft or forward if such positioning would benefit the overall design parameter such as possibly result in a more compact snowmobile.

As per claims 26 and 27, the modified Uchida in view of Minami et al. invention discloses the claimed invention except for the specific side of the engine which the turbocharger is located on. Applicant points out no criticality for either specific positioning, and in fact points out that the turbocharger may be arranged on the starboard or port side of the engine. Thus, it would appear that the exact positioning of the turbocharger with respect to the engine is not critical and may be varied, as for example one may decide to have a particular engine orientation which would dictate the exact positioning of the turbocharger. It would have been obvious at the time of the invention to one of ordinary skill in the art to choose the exact positioning of the turbocharger with respect to the engine, to provide optimum operation within the overall snowmobile configuration.

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5. Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida in view of Minami et al. as applied to claims 1 and 2 above, and further in view of Roettgen et al. (U.S. Patent No. 4,565,177).

The modified Uchida invention is silent as to the presence of a heat exchanger formed of a heat conductive material connected to the turbocharger such that pressurized air from the turbocharger may enter therein, the heat exchanger being constructed and arranged such that heat from the pressurized air is dissipated therefrom to the atmosphere via the heat conductive material, wherein the heat exchanger is an intercooler, the intercooler including an intake portion and an outlet portion, the intake and outlet portions connected by series of spaced hollow conduits. Roettgen et al. (see Background Art section for disclosure that it has long been conventional to increase specific output of a turbocharged engine by use of a aftercooler/intercooler type heat exchanger and the way this works) disclose a heat exchanger (col. 1, line 14) formed of a heat conductive material (metal; abstract: lines 1-5) connected to the turbocharger such that pressurized air from the turbocharger may enter therein (col. 1, lines 12-25), the heat exchanger being constructed and arranged such that heat from the pressurized air is dissipated therefrom to the atmosphere via the heat conductive material (column describes that the heat is transferred from the pressurized, heated air coming from the turbocharger to the fluid cooling medium; the abstract mentions that the heat exchanger of Roettgen et al. can be constructed of metal, which is a heat conductive material, and will therefore dissipate at least some, if not most, heat that is transferred to the cooling medium into the surrounding

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atmosphere), wherein the heat exchanger is an intercooler (Roettgen et al. mention at col. 1, lines 12-14 that an aftercooler or intercooler are interchangeable types of heat exchangers and that it is long been conventional to increase the specific output of a supercharged or turbocharged engine by use of one), the intercooler including an intake portion (24) and an outlet portion (48), the intake and outlet portions connected by series of spaced hollow conduits (the spaced hollow conduits between the fins, as shown in Figure 4) in order to increase the air density and thereby help generate a greater amount of energy upon combustion (col. 1, lines 20-25). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to provide a heat exchanger formed of a heat conductive material connected to the turbocharger such that pressurized air from the turbocharger may enter therein, the heat exchanger being constructed and arranged such that heat from the pressurized air is dissipated therefrom to the atmosphere via the heat conductive material on the modified Uchida device, as taught by Roettgen et al., in order to increase the air density and thereby help generate a greater amount of energy upon combustion.

6. Claims 4 and 13 rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida in view of Minami et al. and further in view of Roettgen et al., as applied to claim 3 above, and still further in view of Middlebrook (U.S. Patent No. 6,293,264).

The modified Uchida invention is silent as to a plenum connected to the heat exchanger such that air from the heat exchanger may enter the plenum, the plenum further connected to the air inlet (of the engine) and constructed and arranged such that cyclically pressurized amplitude of the air from the turbocharger via the heat exchanger

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may collect therein such that the pressurization amplitude of the air upon exiting the plenum and entering the air inlet is substantially constant. Middlebrook discloses a plenum (20) connected to the heat exchanger (16) such that air from the heat exchanger may enter the plenum (claim 1, part (c)), the plenum further connected to the air inlet (col. 4, lines 40-47) and constructed and arranged such that cyclically pressurized amplitude of the air from the turbocharger via the heat exchanger may collect therein such that the pressurization amplitude of the air upon exiting the plenum and entering the air inlet is substantially constant (col. 2, lines 8-45) in order to provide an easily bolted-on aftercooler (col. 2, line 20) which provides uniform and straight airflow from the intake plenum, through the heat exchanger and to the intake ports of the cylinders (col. 2, lines 46-50). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a plenum connected to the heat exchanger such that air from the heat exchanger may enter the plenum, the plenum further connected to the air inlet (of the engine) and constructed and arranged such that cyclically pressurized amplitude of the air from the turbocharger via the heat exchanger may collect therein such that the pressurization amplitude of the air upon exiting the plenum and entering the air inlet is substantially constant on the modified Uchida invention, as taught by Middlebrook, in order to provide an easily bolted-on aftercooler which provides uniform and straight airflow from the intake plenum, through the heat exchanger and to the intake ports of the cylinders.

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7. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida in view of Minami et al. and further in view of Roettgen et al. as applied to claim 7 above, and further in view of Fields et al. (4,249,626).

As per claims 8 and 10, the modified Uchida invention disclose all of Applicant's claimed invention except that the heat exchanger is positioned proximate the forward portion of the frame, and the intercooler is arranged generally normally to the oncoming air flow, parallel to the oncoming air flow or at an angle to the oncoming air flow. Fields et al. disclose a heat exchanger (20) for a snowmobile that is arranged generally normally or at an angle to the oncoming air flow (Figure 1 shows that element 20 is generally normal to the oncoming air flow and Figure 4 shows that the element 20 is at a slight angle, A, to the oncoming air flow) in order to provide optimum operation with increased air flow through the heat exchanger (col. 4, lines 36-61). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide that the heat exchanger is positioned proximate the forward portion of the frame, and the intercooler is arranged generally normally to the oncoming air flow or at an angle to the oncoming air flow on the modified Uchida snowmobile, as taught by Fields et al., in order to provide optimum operation with increased air flow through the heat exchanger.

As per claim 9, the modified Uchida in view of Fields et al. invention discloses the claimed invention except for the heat exchanger being arranged generally parallel to the oncoming airflow. Applicant points out no criticality for that specific positioning, and in fact points out that the heat exchanger may be arranged parallel with or normal to the oncoming airflow as well as angled with respect to the oncoming air flow. Thus, it would

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appear that the exact positioning of the heat exchanger with respect to the oncoming air flow is not critical and may be varied depending upon possible overall design parameters, such as overall compactness of the snowmobile. It would have been obvious at the time of the invention to one of ordinary skill in the art to choose the exact positioning of the heat exchanger with respect to the oncoming air flow, such as parallel to the airflow, if such positioning would benefit the overall design parameter such as possibly resulting in a more compact snowmobile.

8. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida in view of Minami et al., as applied to claim 1 above, and further in view of Sokolowski (5,598,820).

The modified Uchida invention discloses all of Applicant's claimed limitations except that the engine is of a V-twin two cylinder four-stroke type engine. Sokolowski discloses a small, personal vehicle having a V-twin two cylinder type engine (col. 8, lines 58-59) in order to provide an engine configuration which provides greater torque and power output (abstract lines 1-2). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide that the engine is of a V-twin two cylinder type on the modified Uchida invention, as taught by Sokolowski, in order to provide an engine configuration which provides greater torque and power output.

9. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida in view of Minami et al., as applied to claim 1 above, and further in view of Etou et al. (U.S. Patent No. 6,216,809).

The modified Uchida invention discloses all of Applicant's claimed limitations except that the engine is of an in-line, multi-cylinder type engine. Etou et al. disclose a snowmobile having an inline, multicylinder arrangement for a four-stroke engine (col. 3, lines 6-15 disclose a three cylinder engine that may be four-cycle, i.e., four-stroke) in order to provide optimum space configuration for the under-the-hood arrangement of the snowmobile by allowing the engine to be positioned to one side (a recognized benefit of providing an in-line cylinder arrangement for an engine, as evidenced by col. 5, lines 55-67 of U.S. Patent No. 5,660,245 to Marrier et al.). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide that the engine is of an in-line, multi-cylinder type on the four-stroke engine of the modified Uchida invention, as taught by Etou et al., in order to provide optimum space configuration for the under-the-hood arrangement of the snowmobile by allowing the engine to be positioned to one side.

Allowable Subject Matter

10. Claims 11, 12, 14, 17-23 and 28-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

11. Applicant's arguments with respect to claims 1-10, 13, 15, 16, 24 and 25 have been considered but are moot in view of the new ground(s) of rejection. Since

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Applicant's only arguments were to the date of the primary references (Atsuumi et al. and Yatagai et al.), these arguments are moot in view of the new rejections using Uchida the primary reference.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Berthiaume discloses a personal watercraft (different inventor but same assignee as Applicant's present application) including a four-stroke engine with a turbocharger. Marzec et al. and Martin disclose all-terrain vehicles (ATV's) with a turbocharger.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matt Luby whose telephone number is (703) 305-0441. The examiner can normally be reached on Monday-Friday, 9:30 a.m. to 6:00 p.m..

14. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lesley Morris can be reached on (703) 308-0629. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Matt Luby
Examiner
Art Unit 3611



M.I.
November 22, 2004